Payment includes, but is not limited to, furnishing the source of the borrow; providing and implementing a development, use and reclamation plan, evaluation of potential wetlands and endangered species, building, maintaining and obliterating haul roads, clearing and grubbing or draining the borrow source; removing, stockpiling and replacing topsoil, removing and disposing of overburden and other unsuitable material, excavation, hauling, formation of roadway embankments, subgrades and shoulders, restoration of the source and haul roads to an acceptable condition, obtaining permits and certifications and maintaining the work.

Payment will be made under:

Pay Item	Pay Unit
Borrow Excavation	Cubic Yard

SECTION 235
EMBANKMENTS

235-1 DESCRIPTION

Place suitable material excavated under Sections 225, 226, 230 and 240 in embankments, backfills and earth berms, to conform with the lines, grades and typical cross sections shown in the plans. Fill and compact holes, pits and other depressions when unsuitable material has been removed. Work includes preparation, formation, compaction and maintenance of the embankment area as well as the formation of benches in the existing ground with rises less than 60".

235-2 MATERIALS

Refer to Division 10.

Use soil consisting of loose, friable, sandy material free of subsoil admixtures, refuse, stumps, rocks, roots, root mats or other unsatisfactory material. Do not use material that meets AASHTO M 145 for soil classification A-2-5 and A-5 with a PI of less than 8 within 12" of the subgrade.

Wet, dry or frozen material may be suitable when dried, wetted or thawed, respectively. Aerate and dry material containing moisture content in excess of what is required to achieve embankment stability and specified density. Waste suitable material only with written authorization.

235-3 CONSTRUCTION METHODS

Coordinate work with excavation operations in accordance with Articles 107-12 and 225-2.

(A) Preparation for Embankment

Finish clearing and grubbing within an area before starting embankment in accordance with Section 200. Remove and waste organic or other unsuitable material unless otherwise directed.

Plow mowed sod and leave in place where the height of embankment to be constructed is greater than 6 ft measured under the roadbed. Plow or scarify and break up cleavage planes of all underlying road surfaces. Remove or break up existing pavement in accordance with Section 250.

Bench existing slopes steeper than 4:1 measured at right angles to the roadway. Provide rises of at least 12" and no more than 60" as embankment is brought up in layers. Provide sufficient width for the operation of placing and compaction equipment. Begin bench cut at the intersection of the original ground and the vertical side of the previous cut. Construct benches greater than 60" in height only when shown in the plans. Such benches will be paid in accordance with the contract.

(B) Embankment Formation

Uniformly spread material in successive, approximately horizontal layers of not more than 10" depth, loose measurement, for the full width of the cross section. Compact each layer in accordance with Subarticle 235-3(C).

Shape embankment surface to properly drain at all times.

Route construction equipment uniformly over the full width of the embankment and prevent deep rutting.

May construct the first layer of embankments across saturated or unstable material, that does not support the weight of hauling equipment, by successively dumping a uniformly distributed layer of a thickness not greater than necessary to support hauling equipment while placing subsequent layers.

When placing material in swamp or in water, keep unsuitable surge material in a fluid state or remove to prevent trapping in or under embankment.

When shown in the plans or allowed by the contract, form a satisfactory base by end or side dumping in valleys, ravines and at the foot of slopes on side hills.

Where embankments are being constructed principally of rock or broken pavement, place in uniform layers with a maximum depth of 36". Place rock or broken pavement so larger pieces are evenly distributed and are no larger than 36" in any dimension. Fill all voids. Place rock or broken pavement lifts at least 2 ft below finished subgrade or finished grade whichever is lower.

Do not place rock or broken pavement greater than 2" in diameter within 12" of the subgrade or finished grade whichever is lower. Do not place rock or broken pavement in areas where foundations are to be placed.

Place select material where indicated in the contract. Construct the top 6" of shoulder and fill slopes with material that meets Article 1019-2. Construct stabilized embankment when required by the contract.

Install pipe culverts as specified in Section 300. Construct subsurface drains adjacent to structures as required by Article 414-8 for box culverts, except for that portion of the drain located below the elevation of the original ground. Do not disturb existing utilities within the project construction limits until released by the Engineer.

Do not place rock or broken pavement in embankment areas where piles or drilled shaft foundations are to be constructed or where underground utilities exist. This requirement shall include, but not be limited to, piles and foundations for structures, metal signal poles, overhead sign structures and high mount lighting.

(C) Embankment Compaction

Compact each layer for its full width to a density equal to at least 95% of that obtained by compacting a sample of the material in accordance AASHTO T 99 as modified by the Department. Copies of these modified procedures are available upon request from the Department’s Materials and Tests Unit.

Uniformly bond all layers to preceding layers. Compact all surfaces on embankment slopes, principally constructed of soil, that are flatter than 1.5:1 using tracked equipment or other approved methods.

Increase or decrease moisture content of the material before compacting to produce the maximum density that will provide a stable grade. Exempt portions of rock embankments, that cannot be tested by approved methods, from density requirements.

(D) Maintenance

Maintain all embankments made under the contract until final acceptance. Construct and maintain adequate drainage of surface runoff to prevent soil erosion. Replace damaged or displaced embankment.

Bring all embankments to the grade and cross section shown in the plans before final inspection and acceptance.

235-4 TOLERANCES

Finish subgrade surface within ± 0.10 ft from the established grade after it has been graded to a uniform surface.

235-5 MEASUREMENT AND PAYMENT

Payment will not be made for embankment construction. Payment at the contract unit prices for the various items covered by Sections 225, 226, 230 and 240 will be full compensation for all work covered by this section.

Repairs to embankments caused by Contractor carelessness or negligence will be incidental to the work of Sections 225, 226, 230 and 240. Repairs to embankments as a result of natural causes will be at the contract unit price for the excavated material required to make the necessary repairs.

SECTION 240
DITCH EXCAVATION

240-1 DESCRIPTION

Excavate and satisfactorily dispose of all materials excavated in the construction of ditches except silt ditches.

(A) Drainage Ditches

Define “drainage ditches” as inlet and outlet ditches for pipe culverts and structures, changes in channels of streams, ditches draining borrow and material sources and parallel or lateral ditches when such ditches are separated from the roadway slope by an area of natural ground or berm.

Unless otherwise classified in the plans, parallel or lateral ditches constructed as an integral part of the graded roadbed, having a continuous slope from the outer limit of the shoulder to the bottom of the ditch, will be considered to be within the roadway grading limits and will be part of the work covered by Section 225.

(B) Berm Ditches

Define “berm ditches” as ditches constructed by either excavation or the construction of earth berms along the top of cut slopes. The location of berm ditches will be as shown in the plans or as directed.

240-2 GENERAL

Excavate to the lines, grades, typical sections and details shown in the plans or established. Coordinate all work covered by this section with the grading, construction of drainage structures, excavation of borrow and material sources and other work along the project and maintain in a satisfactory condition so that adequate drainage is provided at all times. Maintain the ditches until the final acceptance of the project. Trim flush with the sides of the ditch any roots that protrude into the ditch. Complete inlet and outlet ditches for pipelines before the pipe is installed unless otherwise permitted.